(12) **United States Patent**
Sewell

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(54) **MEASUREMENT SYSTEM**

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(57) **ABSTRACT**

The invention concerns measurement apparatus for obtaining measurements relating to an attributes or attributes θ of a succession of events in which an event generates a measurable physical reaction, the apparatus comprising generating device for generating a value D representing the physical reaction caused by an event, and inferential processing device for deriving the marginal distributions of a probability distribution for the attribute or attributes θ of the events by carrying out a Bayesian inferential process utilizing the value D, the marginal values of a prior probability distribution and a stored set of values representing a range of probability distributions for the occurrence of each of the events being measured, the inferential process being an iterative process in which the marginals posterior to one event are generated by updating the marginals prior to that event.

13 Claims, 7 Drawing Sheets